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Using Multidimensional Customer Reviews to Extract the Relative Importance of Different Dimensions of Product Quality

Roozmehr Safı
University of Missouri-Kansas City, safır@umkc.edu

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TREO Talk Paper

Roozmehr Safi
University of Missouri - Kansas City
SafiR@umkc.edu

Abstract

In addition to serving as important sources of information for prospective customers, online reviews can provide valuable insights about customer preferences and priorities to providers of goods and services. In this study I investigate how users' valuations of various aspects of product quality can be inferred from online reviews. To this end, I use data from a review website that allows customers to not only assign an overall rating to product quality, but also to assign separate ratings to some key dimensions of quality. By applying "relative weights analysis," a useful but vastly underused application of multiple regression analysis, I investigate how individual dimension of product quality contribute to its overall rating. Specifically, I measure the percentage contribution of each dimension of quality to the overall rating.

Figure 1 provides an example of the results obtained from applying this analysis to a product with about 1100 reviews. In this example, a multiple regression analysis shows that the five dimensions of quality investigated, namely product functionality, build quality, value for money, aesthetics, and ease of installation, together account for about 82% of the variation in product overall quality rating. A relative weights analysis further "decomposes" this percentage to its more elementary components by showing the percentage contribution of each of these five dimensions of quality to product's overall rating. In this case, functionality ranks first with about 24% and ease of installation ranks last, with about 12% share of explanatory power.

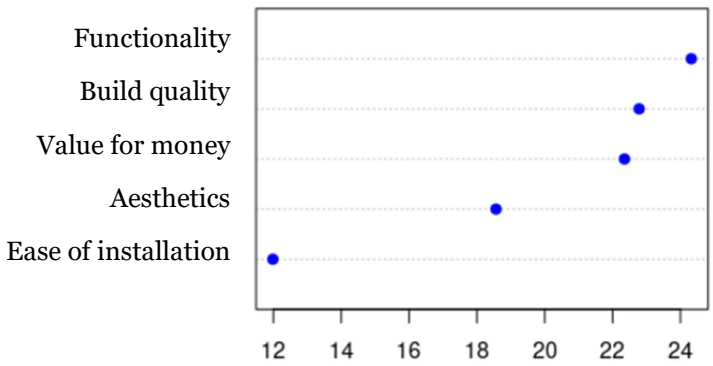

Figure 1. Example of decomposing overall product quality rating to its basic components.

The proposed method, applied in this example to a product, can be applied to various other goods and services, such as food, entertainment, hotel, etc. Accordingly, it provides a valuable, low cost method for distilling and understanding consumer preferences and tastes. The method, therefore, can potentially be used instead of, or in addition to, other –often more costly and effortful– traditional methods for understanding consumer preferences, such as focus groups. As the next step in this research stream, applying text mining techniques to consumer text reviews for better understanding their concerns about various dimensions of quality and corelating those concerns with overall product rating remains another promising research topic.